

**REMARKS/ARGUMENTS**

Reconsideration and allowance of this application are respectfully requested.

Currently, claims 1-14 are pending in this application.

**Allowable Subject Matter:**

Claims 4-6, 8-10 and 13-14 have been allowed. The Office Action held that claims 2-3 were objected to as being dependent upon a rejected base claim, but held that these claims would be allowable if rewritten in independent form. Claims 2-3 have been rewritten in independent form and thus these claims are allowable.

**Rejections Under 35 U.S.C. §102 and §103:**

Claim 1 was rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Zhang et al (U.S. '043, hereinafter "Zhang"). Applicant respectfully traverses this rejection.

For a reference to anticipate a claim, each element must be found, either expressly or under principles of inherency, in the reference. Each element of the claimed invention is not found in Zhang. For example, Zhang fails to disclose "...the target air-fuel ratio being set to a normal target air-fuel ratio in a first setting process executed by the air-fuel ratio control unit when the secondary air is not supplied into the exhaust passage by the secondary air supply mechanism, and the target air-fuel ratio being set to another target air-fuel ratio in a second setting process executed by the air-fuel ratio feedback control unit when a specified air-fuel ratio feedback condition is established during supply of the secondary air provided by the secondary air supply mechanism," as required by independent claim 1.

Zhang discloses calculating a correction factor for an injection duration in dependence on a correction value for secondary-air mass flow, a main-air mass flow and a pilot control value for the air/fuel ratio. While Zhang thus discloses determining a correction factor for injection duration based on a pilot control value for the air/fuel ratio, there is no disclosure or even suggestion of a control unit executing two different processes for setting the target air/fuel ratio: a first setting process in which the target air/fuel ratio is set to a normal target air/fuel ratio when the secondary air is not supplied, and a second setting process in which the target air/fuel ratio is set to another target air/fuel ratio when the secondary air is being supplied. Indeed, Zhang fails to provide any detail regarding setting the target air/fuel ratio, let alone setting target air/fuel ratio in a first setting process when secondary air is not supplied and a second setting process occurring when secondary air is being supplied. The claim features relating to the first setting process and the second setting process are supported by, for example, steps 504 and 505 in Fig. 6 of the originally-filed application.

Accordingly, Applicant respectfully requests that the rejection of claim 1 be withdrawn.

Claim 7 was rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Takeshima (U.S. '887). Applicant respectfully traverses this rejection. Claim 7 requires, *inter alia*, "a fuel supply control unit for calculating a fuel injection amount based on a basic fuel injection amount and a correction amount to correct the basic fuel injection amount, the fuel supply control unit inhibiting a correction which would increase the basic fuel injection amount during supply of the secondary air provided by the secondary air supply mechanism." Takeshima fails to disclose this limitation. Col. 18, line 61 to

col. 19, line 2 (specifically identified by the Office Action) of Takeshima states the following:

“In order to solve this problem, and to increase the capacity of the NO<sub>x</sub> absorbent 16 to maximum extent, the secondary air supply system 66 in this embodiment supplies secondary air to the NO<sub>x</sub> absorbent 16 when the air-fuel ratio of the exhaust gas flowing into the NO<sub>x</sub> absorbent 16 becomes lean. Namely, in this embodiment the air fuel ratio of the exhaust gas flowing into the NO<sub>x</sub> absorbent 16 becomes leaner than the operating air-fuel ratio of the engine during the lean air-fuel ratio period.”

While this portion of Takeshima discloses a secondary air supply system 66 supplying secondary air to absorbent 16 when the air-fuel ratio of exhaust gas flowing into the absorbent 16 becomes lean to make the exhaust gas flowing into the absorbent 16 even leaner, there is no teaching or suggestion of inhibiting an increase in the amount of fuel injection during the supply of the secondary air. Instead, this portion of Takeshima merely discloses making the air/fuel ratio leaner, not inhibiting an increase in an amount of fuel injection.

While col. 9, lines 3-28 discloses calculating a basic fuel injection amount TAUP, this portion of Takeshima also fails to teach or suggest inhibiting an increase in an amount of the basic fuel injection amount by the correction amount when secondary air is supplied.

Accordingly, Applicant respectfully requests that the rejection of claim 7 under 35 U.S.C. §102 be withdrawn.

Claim 11 was rejected under 35 U.S.C. §103 as allegedly being unpatentable over Zhang in view of Abe (U.S. '910). Applicant respectfully traverses this rejection.

In order to establish a *prima facie* case of obviousness, all of the claim limitations must be taught or suggested by the prior art. The combination of Zhang and Abe fails to teach or suggest all of the claim limitations. For example, the combination fails to teach or suggest “an air-fuel ratio arithmetic unit for calculating, as the air-fuel ratio, a minimum value of air-fuel ratio values detected and output by the air-fuel ratio detection unit during supply of the secondary air provided by the secondary air supply mechanism,” as required by independent claim 11. Section 6 of the Office Action admits that Zhang fails to disclose the above noted limitation. Applicant respectfully submits that Abe fails to remedy this deficiency. Namely, col. 1, lines 56-59 (specifically identified by the Office Action) of Abe states “The control unit 15 further comprises air-fuel ratio calculation means 6 for calculating an air fuel ratio from a minimum value of the flame resistance detected by the electrode plug 18 (emphasis added). . . .” The air-fuel ratio detection unit required by claim 11 is for detecting an air-fuel ratio in the exhaust gas. The air-fuel ratio arithmetic unit required by the invention of claim 11 calculates, as the air-fuel ratio, a minimum value of air-fuel ratio values output by the air-fuel ratio detection unit supply of the secondary air. Rather than determining a minimum value of air-fuel ratios, Abe explicitly teaches determining a minimum value of flame resistance.

Moreover, Abe fails to even appreciate that an air-fuel ratio is changed by a supply of secondary air, and thus there is no suggestion or motivation to one of ordinary skill in the art to combine the teachings of Zhang and Abe. The combination fails to appreciate benefits of the invention of claim 11 including improved drivability resulting from calculating a minimum value of detected air-fuel ratio values.

Accordingly, Applicant respectfully requests that the rejection of claim 11 under 35 U.S.C. §103 be withdrawn.

Claim 12 was rejected under 35 U.S.C. §103 as allegedly being unpatentable over Zhang in view of Mitsutani (U.S. '421). Applicant respectfully traverses this rejection. Claim 12 requires, *inter alia*, “an air-fuel ratio arithmetic unit for calculating, as the air-fuel ratio, an output value detected by the air-fuel ratio detection unit at a specified crank angle during supply of the secondary air provided by the secondary air supply mechanism.” Applicant submits that one of ordinary skill in the art would not have been motivated to combine the teachings disclosed by Zhang and Mitsutani. In particular, while Mitsutani discloses a main air-fuel ratio feedback control routine being executed at every fixed crank angle, there is no teaching or suggestion of any type of supply of secondary air in Mitsutani, let alone performing the air-fuel ratio feedback control routine disclosed in Mitsutani during supply of secondary air. Accordingly, neither Zhang nor Mitsutani appreciates the benefits derived from the invention of claim 12 including suppressing a change in engine rotation speed and improving drivability.

Accordingly, Applicant respectfully requests that the rejection of claim 12 under 35 U.S.C. §103 be withdrawn.

*KITA et al.*  
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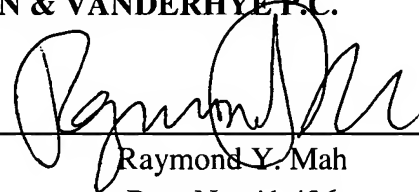
**Conclusion:**

Applicant believes that this entire application is in condition for allowance and respectfully requests a notice to this effect. If the Examiner has any questions or believes that an interview would further prosecution of this application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

**NIXON & VANDERHYTE P.C.**

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